

Amendments to the Claims:

Please cancel claims 1-19 and 21-22, amend claims 23-27 and 29-32 and add claims 34-150 as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-19. (Cancelled)

20. (Withdrawn) A process for making an antibody that binds to IGF-IR, comprising the steps of:

- (a) immunizing a non-human mammal with an immunogen comprising IGF-IR, wherein the mammal is capable of expressing human antibodies in B cells of the animal;
- (b) isolating B cells from the mammal;
- (c) screening said B cells, or cell lines derived therefrom, to identify a cell line that produces antibodies that bind to IGF-IR;
- (d) culturing the cell line that expresses antibodies that bind to IGF-IR; and
- (e) isolating antibodies that bind to IGF-IR from the cell line.

21-22. (Cancelled)

23. (Withdrawn) A method of ~~diagnosing~~ detecting the presence or location of an IGF-IR-expressing tumor in a subject in need thereof, comprising the steps of:

- a) administering the antibody or antigen-binding portion according to ~~any one of claims 1-17~~ claim 34 or an antibody according to claim 39 or 46 to the subject; and

- b) ~~determining the expression of IGF-IR in the subject by localizing where the antibody has bound~~ detecting binding of said antibody,
- e) ~~comparing the expression in part (b) with that of a normal reference subject or standard, and~~
- d) ~~diagnosing the presence or location of the tumor~~ wherein said binding indicates the presence or location of the tumor.

24. (Withdrawn) A method of treating cancer in a human ~~with an antibody or antigen-binding portion thereof that specifically binds to IGF-IR~~, comprising the step of administering to the human an amount of the antibody or antigen-binding portion according to claim 34 effective to treat said cancer.

25. (Withdrawn) A method of treating a patient in need thereof with the antibody or antigen-binding portion thereof according to ~~any one of claims 1-17~~ claim 34, comprising the step of administering to the patient an effective amount of the antibody.

26. (Withdrawn) The method according to either of claims 24 ~~or 25~~, further comprising the step of administering an anti-neoplastic, anti-tumor, anti-angiogenic or chemotherapeutic agent.

27. (Withdrawn) An isolated nucleic acid molecule that comprises a ~~nucleic acid~~ nucleotide sequence that encodes a heavy chain or antigen-binding portion thereof or a light chain or antigen-binding portion thereof of an antibody according to ~~any one of claims 1-17~~ claim 34.

28. (Cancelled)

29. (Withdrawn) A vector comprising the nucleic acid molecule according to ~~either of claims 27 or 28~~ claim 27, wherein the vector optionally comprises an expression control sequence operably linked to the nucleic acid molecule.

30. (Withdrawn) A host cell comprising the vector according to claim 29 or the nucleic acid molecule according to ~~either of claims 27 or 28~~ claim 27.

31. (Withdrawn) A method of making an anti-IGF-IR antibody or antigen-binding portion thereof, comprising culturing the host cell according to claim 30 or the cell line according to claim ~~24~~ 121 under suitable conditions and recovering said antibody or antigen-binding portion.

32. (Withdrawn) A non-human transgenic animal comprising the nucleic acid according to ~~either of claims 27 or 28~~ any one of claims 27 or 148-150, wherein the non-human transgenic animal expresses said nucleic acid.

33. (Withdrawn) A method of treating a subject in need thereof with an antibody or antigen-binding portion thereof that specifically binds to IGF-IR, comprising the steps of

(a) administering an effective amount of an isolated nucleic acid molecule encoding the heavy chain or the antigen-binding portion thereof, an isolated nucleic acid molecule encoding the light chain or the antigen-binding portion thereof, or both the nucleic acid molecules encoding the light chain and the heavy chain or antigen-binding portions thereof; and

(b) expressing the nucleic acid molecule.

34. (New) A human monoclonal antibody that specifically binds human insulin-like growth factor I receptor (IGF-IR) or an antigen-binding portion of said antibody,

wherein the antibody or portion comprises the amino acid sequences of the CDR1, CDR2 and CDR3 regions found in one or more variable domains selected from the group consisting of :

- (a) the variable domain of the light chain of antibody 2.13.2;
- (b) the variable domain of a light chain comprising the amino acid sequence in SEQ ID NO: 6;
- (c) the variable domain of the heavy chain of antibody 2.13.2;
- (d) the variable domain of a heavy chain comprising the amino acid sequence in SEQ ID NO: 8; and
- (e) the variable domain of a light chain comprising SEQ ID NO: 6 and the variable domain of a heavy chain comprising SEQ ID NO: 8.

35. (New) The human monoclonal antibody or antigen-binding portion according to claim 34, comprising the amino acid sequences of the heavy chain CDRs and light chain CDRs of antibody 2.13.2.

36. (New) A monoclonal antibody or an antigen binding portion thereof that specifically binds human insulin-like growth factor I receptor (IGF-IR), wherein said antibody comprises a variable domain of a κ light chain, and wherein said variable domain of a κ light chain comprises the amino acid sequence in SEQ ID NO: 6.

37. (New) A monoclonal antibody or an antigen-binding portion thereof that specifically binds human insulin like growth factor I receptor (IGF-IR), wherein said antibody comprises a variable domain of a heavy chain, and wherein said variable domain of a heavy chain comprises the amino acid sequence in SEQ ID NO: 8.

38. (New) The monoclonal antibody or antigen-binding portion according to claim 37, wherein said antibody further comprises a variable domain of a light chain, and

wherein said variable domain of a light chain comprises the amino acid sequence in SEQ ID NO: 6.

39. (New) A monoclonal antibody that specifically binds human insulin-like growth factor I receptor (IGF-IR), wherein said antibody comprises the amino acid sequence of the heavy chain sequence within SEQ ID NO: 45 and the amino acid sequence of the light chain sequence within SEQ ID NO: 47.

40. (New) A monoclonal antibody or an antigen-binding portion thereof that specifically binds human IGF-IR, comprising heavy chain CDR1, CDR2 and CDR3 regions, said CDR regions comprising the CDR1, CDR2 and CDR3 amino acid sequences, respectively, in SEQ ID NO:45.

41. (New) The monoclonal antibody or antigen-binding portion according to claim 40, wherein said heavy chain further comprises the framework amino acid sequences in SEQ ID NO: 45.

42. (New) A monoclonal antibody that specifically binds human IGF-IR comprising the amino acid sequence of SEQ ID NO: 45, without the signal sequence, or an antigen-binding portion of said antibody.

43. (New) A monoclonal antibody or an antigen binding portion thereof that specifically binds human IGF-IR, comprising light chain CDR1, CDR2 and CDR3 regions, said CDR regions comprising the CDR1, CDR2 and CDR3 amino acid sequences, respectively, in SEQ ID NO: 47.

44. (New) The monoclonal antibody or antigen-binding portion according to claim 43, wherein said light chain further comprises the framework amino acid sequences in SEQ ID NO: 47.

45. (New) A monoclonal antibody that specifically binds human IGF-IR comprising the amino acid sequence in SEQ ID NO: 47, without the signal sequence, or an antigen-binding portion of said antibody.

46. (New) A monoclonal antibody that specifically binds human insulin-like growth factor I receptor (IGF-IR) wherein the heavy chain amino acid sequence is SEQ ID NO: 45, without the signal sequence, and the light chain amino acid sequence is SEQ ID NO: 47, without the signal sequence.

47. (New) A hybridoma cell line having American Type Culture Collection (ATCC) accession number PTA-2788.

48. (New) A monoclonal antibody or an antigen-binding portion thereof, that specifically binds human IGF-IR, comprising the heavy chain variable domain and the light chain variable domain of the antibody produced by the hybridoma cell line of claim 47.

49. (New) The monoclonal antibody produced by the hybridoma cell line of claim 47.

50. (New) A monoclonal antibody that specifically binds human IGF-IR comprising the heavy chain amino acid sequence and the light amino acid sequence of the antibody produced by the hybridoma cell line having ATCC accession number PTA-2788.

51. (New) A monoclonal antibody that specifically binds human IGF-IR comprising the amino acid sequence of the heavy chain and the amino acid sequence of the light chain of antibody 2.13.2.

52. (New) The monoclonal antibody according to claim 51, wherein the antibody is monoclonal antibody 2.13.2.

53. (New) A monoclonal antibody that specifically binds human IGF-IR comprising a heavy chain variable domain that utilizes a human DP-47 gene or said gene with at least one of the amino acid substitutions in SEQ ID NO: 45.

54. (New) A monoclonal antibody or antigen-binding portion thereof that specifically binds human IGF-IR, comprising a heavy chain amino acid sequence that utilizes the human V_H 3-23 gene.

55. (New) A monoclonal antibody that specifically binds human IGF-IR comprising a light chain variable domain that utilizes a human A30 gene or said gene with at least one of the amino acid substitutions in SEQ ID NO: 47.

56. (New) A monoclonal antibody or antigen-binding portion thereof that specifically binds human IGF-IR, comprising a light chain amino acid sequence that utilizes the human V_K A30 gene.

57. (New) The human monoclonal antibody or antigen-binding portion according to claim 34, wherein said antibody is selected from the group consisting of: an immunoglobulin G (IgG), an IgM, an IgE, an IgA or an IgD molecule, a single chain antibody or a bispecific antibody.

58. (New) The antigen-binding portion according to claim 34, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

59. (New) The antigen-binding portion according to claim 35, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

60. (New) The antigen-binding portion according to claim 36, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

61. (New) The antigen-binding portion according to claim 37, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

62. (New) The antigen-binding portion according to claim 38, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

63. (New) The antigen-binding portion according to claim 40, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

64. (New) The antigen-binding portion according to claim 41, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

65. (New) The antigen-binding portion according to claim 42, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

66. (New) The antigen-binding portion according to claim 43, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

67. (New) The antigen-binding portion according to claim 44, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

68. (New) The antigen-binding portion according to claim 45, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

69. (New) The antigen-binding portion according to claim 48, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

70. (New) The antigen-binding portion according to claim 54, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

71. (New) The antigen-binding portion according to claim 56, wherein said portion is selected from the group consisting of: a Fab fragment, an $F(ab')_2$ fragment and an Fv fragment.

72. (New) The antigen-binding portion according to claim 57, wherein said portion is selected from the group consisting of: a Fab fragment, an F(ab')₂ fragment and an Fv fragment.

73. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 34 and a pharmaceutically acceptable carrier.

74. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 35 and a pharmaceutically acceptable carrier.

75. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 36 and a pharmaceutically acceptable carrier.

76. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 37 and a pharmaceutically acceptable carrier.

77. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 38 and a pharmaceutically acceptable carrier.

78. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 40 and a pharmaceutically acceptable carrier.

79. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 41 and a pharmaceutically acceptable carrier.

80. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 42 and a pharmaceutically acceptable carrier.

72. (New) The antigen-binding portion according to claim 57, wherein said portion is selected from the group consisting of: a Fab fragment, an F(ab')₂ fragment and an Fv fragment.

73. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 34 and a pharmaceutically acceptable carrier.

74. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 35 and a pharmaceutically acceptable carrier.

75. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 36 and a pharmaceutically acceptable carrier.

76. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 37 and a pharmaceutically acceptable carrier.

77. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 38 and a pharmaceutically acceptable carrier.

78. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 40 and a pharmaceutically acceptable carrier.

79. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 41 and a pharmaceutically acceptable carrier.

80. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 42 and a pharmaceutically acceptable carrier.

81. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 43 and a pharmaceutically acceptable carrier.

82. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 44 and a pharmaceutically acceptable carrier.

83. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 45 and a pharmaceutically acceptable carrier.

84. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 48 and a pharmaceutically acceptable carrier.

85. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 54 and a pharmaceutically acceptable carrier.

86. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 56 and a pharmaceutically acceptable carrier.

87. (New) A pharmaceutical composition comprising the monoclonal antibody or antigen-binding portion according to claim 57 and a pharmaceutically acceptable carrier.

88. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 39 and a pharmaceutically acceptable carrier.

89. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 46 and a pharmaceutically acceptable carrier.

90. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 49 and a pharmaceutically acceptable carrier.

91. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 50 and a pharmaceutically acceptable carrier.

92. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 51 and a pharmaceutically acceptable carrier.

93. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 52 and a pharmaceutically acceptable carrier.

94. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 53 and a pharmaceutically acceptable carrier.

95. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 54 and a pharmaceutically acceptable carrier.

96. (New) A pharmaceutical composition comprising the monoclonal antibody according to claim 55 and a pharmaceutically acceptable carrier.

97. (New) The pharmaceutical composition according to claim 73, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

98. (New) The pharmaceutical composition according to claim 74, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

99. (New) The pharmaceutical composition according to claim 75, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

100. (New) The pharmaceutical composition according to claim 76, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

101. (New) The pharmaceutical composition according to claim 77, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

102. (New) The pharmaceutical composition according to claim 78, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

103. (New) The pharmaceutical composition according to claim 79, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

104. (New) The pharmaceutical composition according to claim 80, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

105. (New) The pharmaceutical composition according to claim 81, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

106. (New) The pharmaceutical composition according to claim 82, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

107. (New) The pharmaceutical composition according to claim 83, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

108. (New) The pharmaceutical composition according to claim 84, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

109. (New) The pharmaceutical composition according to claim 85, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

110. (New) The pharmaceutical composition according to claim 86, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

111. (New) The pharmaceutical composition according to claim 87, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

112. (New) The pharmaceutical composition according to claim 88, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

113. (New) The pharmaceutical composition according to claim 89, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

114. (New) The pharmaceutical composition according to claim 90, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

115. (New) The pharmaceutical composition according to claim 91, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

116. (New) The pharmaceutical composition according to claim 92, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

117. (New) The pharmaceutical composition according to claim 93, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

118. (New) The pharmaceutical composition according to claim 94, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

119. (New) The pharmaceutical composition according to claim 95, further comprising an antineoplastic, chemotherapeutic or anti-tumor agent.

120. (New) An isolated cell line that produces the antibody according to claim 34.

121. (New) The cell line according to claim 120 that produces antibody 2.13.2, or an antibody comprising the amino acid sequences of antibody 2.13.2.

122. (New) A method for decreasing IGF-IR activation in a subject in need thereof comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

123. (New) A method for increasing IGF-IR associated tyrosine phosphorylation in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

124. (New) A method for decreasing IGF-IR signaling in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

125. (New) A method for decreasing IGF-IR binding to IGF-I or IGF-II in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

126. (New) A method for decreasing the level of IGF-IR in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

127. (New) A method for inhibiting tumor growth in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody or antigen-binding portion according to claim 34.

128. (New) The method according to claim 127, wherein the tumor is a colorectal tumor.

129. (New) The method according to claim 127, wherein the tumor is a breast cancer tumor.

130. (New) The method according to claim 127, wherein the tumor is an epidermoid carcinoma cell tumor.

131. (New) The method according to claim 26, wherein the anti-neoplastic agent is adriamycin.

132. (New) A method of detecting the presence or location of an IGF-IR-expressing tumor in a subject in need thereof, comprising the steps of:

a) administering the antibody according to any one of claims 39 or 46; and

b) determining the expression of IGF-IR in the subject by localizing where the antibody has bound,

d) diagnosing the presence or location of the tumor wherein said binding indicates the presence a location of the tumor.

133. (New) A method of treating cancer in a human comprising the step of administering to the human an amount of the antibody according to claim 39 or 46 effective to treat said cancer.

134. (New) A method of treating a patient in need thereof with the antibody according to claim 39 or 46 comprising the step of administering to the patient an effective amount of the antibody.

135. (New) The method according to either of claims 133, further comprising the step of administering an anti-neoplastic, anti-tumor, anti-angiogenic or chemotherapeutic agent.

136. (New) A method for decreasing IGF-IR activation in a subject in need thereof comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

137. (New) A method for increasing IGF-IR associated tyrosine phosphorylation in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

138. (New) A method for decreasing IGF-IR signaling in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

139. (New) A method for decreasing IGF-IR binding to IGF-I or IGF-II in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

140. (New) A method for decreasing the level of IGF-IR in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

141. (New) A method for inhibiting tumor growth in a subject in need thereof, comprising the step of administering to the subject an anti-IGF-IR antibody according to claim 39 or 46.

142. (New) The method according to claim 141, wherein the tumor is a colorectal tumor.

143. (New) The method according to claim 141, wherein the tumor is a breast cancer tumor.

144. (New) The method according to claim 141, wherein the tumor is an epidermoid carcinoma cell tumor.

145. (New) The method according to claim 135, wherein the anti-neoplastic agent is adriamycin.

146. (New) The host cell comprising a nucleic acid molecule encoding the heavy chain and a nucleic acid molecule encoding the light chain of an antibody or antigen-binding portion according to claim 34.

147. (New) The host cell comprising a nucleic acid molecule encoding the heavy chain and a nucleic acid molecule encoding the light chain of an antibody according to claim 39 or 46.

148. (New) An isolated nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule encoding the heavy chain CDR1, CDR2 or CDR3 in SEQ ID NO: 45;

(b) a nucleic acid molecule encoding the light chain CDR1, CDR2 or CDR3 in SEQ ID NO: 47;

(c) nucleotides 70-100, 147-168 or 265-291 of SEQ ID NO: 47;

(d) nucleotides 91-105, 148-196 or 295-342, of SEQ ID NO: 45;

(e) a nucleic acid molecule encoding the heavy chain variable region, without the signal sequence, in SEQ ID NO: 45;

(f) nucleotides 1-376 of antibody 2.13.2 as shown in Fig. 2C-1 and 2C-2;

(g) a nucleic acid molecule encoding the heavy chain amino acid sequence in SEQ ID NO: 45;

(h) a nucleic acid molecule encoding the light chain variable region, without the signal sequence, in SEQ ID NO: 47;

(i) nucleotides 1-322 in SEQ ID NO: 5;

(j) a nucleic acid molecule encoding the light chain amino acid sequence in SEQ ID NO: 47;

(k) a nucleic acid molecule encoding the FR1, FR2, FR3 or FR4 in SEQ ID NO: 45;

(l) nucleotides 1-90, 106-147, 197-294 and 343-376 of the heavy chain of antibody 2.13.2 shown in Fig. 2C-1 and 2C-2;

(m) a nucleic acid molecule encoding the FR1, FR2, FR3 or FR4 in SEQ ID NO: 47;

and

(n) nucleotides 1-69, 101-146, 169-264 and 292-322 of the light chain of antibody 2.13.2 shown in Fig. 1A.

149. (New) An isolated nucleic acid molecule that comprises a nucleotide sequence that encodes a heavy chain or antigen-binding portion thereof or a light chain or antigen-binding portion thereof of an antibody according to claim 39 or 46.

150. (New) The isolated nucleic acid molecule according to claim 27 or 149, wherein the nucleic acid molecule selected from the group consisting of:

- a) a nucleic acid molecule comprising nucleotide sequences encoding the heavy chain CDR1, CDR2 and CDR3 regions of antibody 2.13.2;
- b) a nucleic acid molecule comprising a nucleotide sequence encoding the heavy chain variable domain, without the signal sequence, of antibody 2.13.2;
- c) a nucleic acid molecule comprising a nucleotide sequence encoding the heavy chain amino acid sequence in SEQ ID NO: 45, without the signal sequence, or an antigen-binding portion of said amino acid sequence;
- d) a nucleic acid molecule comprising nucleotide sequences encoding the light chain CDR1, CDR2 and CDR3 regions of antibody 2.13.2;
- e) a nucleic acid molecule comprising a nucleotide sequence encoding the light chain variable domain, without the signal sequence, of antibody 2.13.2;
- f) a nucleic acid molecule comprising a nucleotide sequence encoding the light chain amino acid sequence in SEQ ID NO: 47, without the signal sequence, or an antigen-binding portion of said amino acid sequence;
- g) a nucleic acid molecule comprising a nucleotide sequence encoding an amino acid sequence selected from the group consisting of SEQ ID NOS: 6, 8, 45 or 47; and
- h) a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 5, SEQ ID NO: 7, the light chain sequence of antibody 2.13.2 shown in Fig. 1A and the heavy chain sequence of antibody 2.13.2 shown in Fig. 2C1 to 2C-2.